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ABSTRACT

This report deals with the development of independent study materials for inservice training of teachers. Four major stages in the development of materials are discussed, each requiring different skills, organizations, and resources: (1) identification of user needs, (2) design and production, (3) evaluation and development, and (4) dissemination. Cost effectiveness analysis plays a major role in the process. A model for the development of inservice teacher education materials within a local education authority is presented. (STS)

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The generation and use of learning materials for the in-service education of teachers

A CET discussion document
July 1977

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PREFACE

This document was originally produced as background to a proposal which led CET to establish three pilot schemes in local education authorities (leas). The aim of the pilot schemes is to test the assertions made, and the proposed operating structures given, in the document.

It is made more generally available here in the hope that it may prove useful to teacher training institutions, chief advisers and all others concerned to develop the in-service training of teachers in their own areas.

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SUMMARY

This paper argues that learning materials can make a major contribution to the in-service education of teachers, (INSET) needs of an authority. It assumes four stages in their development: identifying needs; design and production; evaluation; dissemination. It suggests that in most leas suitable resources exist already for carrying out each stage, and that only a suitable coordinating structure is needed to enable an lea to develop and use materials for INSET. The financial implications are touched on.

PART I: INSET AT A TIME OF ECONOMIC STRINGENCY

1.1 The need for increased INSET provision

The James Report, 'Teacher Education and Training', and the White Paper, 'A framework for expansion', both assumed that the implementation of their recommendations would be accompanied by a 'third cycle' element of continuously available education and training for the teacher in service. In addition the current rapid changes in curricula, and teaching and learning styles, and the general demand for an increased professionalism to be shown by teacher mean that the need to expand INSET provision for teachers has never been as great. While the Department of Education and Science (DES), unions, local education authorities (leas) and most people involved in the education service recognise this, the present economic climate makes it impossible to provide, by conventional means, in-service training on the scale, or of the quality, required.

1.2 The changing pattern of INSET provision

While it would be untrue to say that all INSET provision in the past has been carried out by attendance on courses, that has been the major method for the formalised element of the INSET programmes of many authorities, if we include attendance at teachers' centres, colleges, etc, both during and after school hours. This method is expensive, both financially in terms of travel, subsistence and the cost of replacement teachers where appropriate, and expensive in INSET resources including tutors, in that courses can be run only when groups of teachers can gather, but then only for the largest group that can be accommodated at that time.

An alternative to this 'centralised' method of taking the teachers to the training is to take the training to the teachers, either in person or in some mediated form. As well as being possibly cheaper this 'school-based' approach also appears to suit the current emphasis on school-focused 'professional' aspects of in-service training. It must however ensure training demonstrably at least as effective as that which the centralised approach provides.

2. A Role for Educational Technology and Independent Study Materials

2.1 Characteristics of learning materials

Educational technology is a systematic application of relevant knowledge and techniques to increase the effectiveness of learning. Its strengths lie in openness, that is, a reliance on stated and agreed aims and criteria and on reasoned decisions and procedures, which are accessible to objective evaluation techniques. As such it is particularly responsive to the expressed needs of learners (learners' in this context are the teachers for whom INSET is being provided) and, in the case of teacher education, to variations resulting from local, regional, financial, social and other constraints.

One application of educational technology is the design, production, mediation, and evaluation of materials which enable the learner to achieve clearly specified aims without, or with minimal, support from a tutor. Independent study materials have three main strengths.

2.1.1 They are effective

Such materials externalise the teaching and learning experience, laying it open to critical evaluation and so improvement. by the producing tutor or teacher, his colleagues or the learners. Learning materials may be designed to involve the learner actively and provide him with immediate feedback on his progress.

2.1.2 They can be flexible in use

Structured independent study materials release the learner from the obligation to learn only at a particular time and place. Much learning can be organised to integrate private study of skills with their immediate practice in the teacher's own classroom or school. Individuals can, by choosing from available resources, design 'open learning' to meet their specific and changing needs.

2.1.3 They are cost effective

Effective learning materials can be centrally or regionally generated, which allows the expertise of one tutor to reach a much larger audience than is possible in a conventional face-to-face learning environment. Systems of administration can be developed which avoid massive duplication of these materials, since one set of materials available on a loan basis can serve many individual learners or groups.

2.2 The requirements of materials for different patterns of INSET organisation

Types of courses, local conditions and existence of other materials are factors which will influence the types of materials which are to be

generated.

2.2.1 Types of courses

The range of courses possible falls into six categories:

(i) full-time programmes of study leading to awards

(ii) part-time programmes of study leading to awards

(iii) short-term but intensive residential courses

(iv) courses organised on a part-time basis in local centres

(v) school-based courses

(vi) support courses for individual teachers.

Each of these would have different requirements in material support. While independent study materials could be used to advantage in all the categories above, (i) and (iii) are likely to be organised more traditionally and require materials to support tutors in lectures, seminars and tutorials, while (v) and (vi) may be entirely dependent, in some areas, on the availability of structured study materials. (ii) and (iv) may be the type of course most likely to benefit from a mixture of independent study materials for use at home with attendance for tutorials.

2.2.2 Local conditions

(i) The geographical dispersal and size of schools is likely to have major effects on the organisation of in-service training. At least one rural authority is informally beginning to consider the advantages of distant learning systems as a means of helping teachers who live and work far from teachers' centres or colleges.

(ii) Equipment resources are very varied in schools and leas. It may, therefore, be necessary to produce materials in different formats to suit different conditions.

(iii) Local expertise can be very considerable in most authorities, embracing not only members of the advisory service but experienced teachers and administrators at all levels, teacher training staff and where appropriate members of other professions. Certainly during the economic standstill it is not likely that large numbers of additional advisers will be employed. Expertise, nevertheless, can be shared, as the organisers of various official and unofficial induction-year pilot schemes have found. Well organised support materials, teachers' guides, self-instructional materials, all have a role to play in disseminating expertise.

(iv) Local geographical, historical or social conditions may well affect the content of the course prgrammes. CET's experience with the familiarisation materials has shown for example, that films about

middle-class schools do not have much credibility with teachers from EPA schools.

(v) The above points, (i) – (iv), suggest that any programme of materials production would need to give careful consideration to local differences.

2.3 The case for the use of learning materials for INSET provision

The general assumptions on which the case for the development of learning materials to support INSET programmes rests are therefore that:

- there is a need for an expansion of INSET provision
- this expansion cannot take place using conventional patterns of provision because of financial constraints
- learning materials can be developed which are cost-beneficial (and possibly cost-effective) particularly suited to school-focused INSET, and responsive to local needs and conditions.

The remainder of this paper considers the procedures through which a lea could produce learning materials, the resources available and the organisational structure required for their coordination. In so doing it proposes the fuller exploitation of existing facilities and resources which may involve a small amount of additional expenditure to achieve satisfactory coordination.

PART II: DEVELOPMENT PROCEDURES FOR LEARNING MATERIALS

3.1 Introduction

There are four major stages to the development of materials, each requiring different skills, organisations and resources:

(i) indentification of users' needs
(ii) design and production
(iii) evaluation and development
(iv) dissemination

3.2 Indentification of users' needs

The centralised or coordinated generation of learning materials can only be effective or efficient when it is based on sound knowledge of the expressed needs of the appropriate learners. It therefore presupposes adequate sources of information about those needs, and a system for coordinating the information and making it available to those with responsibility for causing appropriate materials to be produced. The 'users' here, therefore, may be considered as both the lea implementing an INSET programme and the teachers learning within that programme.

3.2.1 Sources of information on INSET needs

These may be divided into two groups: those internal and specific to the lea; those outside bodies who control, directly or indirectly, or are in a position to foresee changes in the professional demands to be made on teachers. Some sources in each group are listed below:

(i) teachers
teacher tutors
headteachers
advisers
teachers' centre wardens
educational administrators

(ii) teachers' professional bodies
national research bodies
initial training institutions
examining bodies
national providers of INSET (eg , The Open University (OU), The City and Guilds of London Institute (CGLI), The Department of Education and Science (DES), etc)

3.2.2 Within authority coordination of information in INSET needs

It is apparent that any individual or working party concerned to identify INSET needs will have to have access to all these sources. With the first group of sources of information it will be important also to have the goodwill and cooperation of those from whom the information comes. The form of information available from the second grouping requires a considerable degree of interpretation before it can be related to local needs. Furthermore the individual or group must, in order to cause its decisions on materials required to be implemented, have ready access to a wide range of (often previously uncoordinated) facilities (see below) and some budgetary control. It follows that the appointment of an individual, or the constitution of a working party, or both, should recognise the interpersonal and organisational skills required and the level of authority necessary for effective operation. Where an authority already has an individual, or a working party, with overall responsibility for developing an INSET programme the relationship between thse and any new individual or group appointed to coordinate the development of INSET materials will need careful consideration. In particular, responsibility for diagnosis of needs, for selection of areas for treatment through materials, and for allocation of funds will need to be spelled out.

3.3 Design and production facilties

When an in-service training need has been identified, and seems suitable for provision through learning materials, then it requires the availability of the

combined skills of subject experts and learning materials designers. Together they would identify the contexts and characteristics of the teachers with whom the materials will be used, clarify the objectives of the material, choose appropriate modes of learning, select and construct content, design assessments if required and state criteria by which the material should be evaluated. Then, and only then, a detailed brief can be given to technical and other support staff, such as graphics designers, for the physical production of the learning resources. However, because of the interactive nature of the educational, communication and technical aspects of learning materials the design and production are often, but not necessarily, undertaken by one and the same agency.

3.3.1 Agencies available for the design and production of learning materials

These generally fall into two groups – those which combine design staff with production facilities, and those groupings which may not have direct access to production facilities.

(i) *Educational institutions.* Many institutions of further and higher education are now well equipped to produce a wide range of learning materials and in most cases staff with design experience manage these production units. Where the same institution has an initial teacher training department with suitable subject or method specialist staff the complete design and production of units of INSET learning materials could be commissioned from them. Such institutions include polytechnics, colleges of education, colleges of further education, some of the larger teacher's centres and local school resource services. University audio-visual service units may also accept commissions but are likely to charge an authority fees or costs.

(ii) *Television consortia.* Most have considerable expertise in production, working to third party briefs, and knowledge of local conditions and requirements. Though most have been confined to television, they could, like the Chiltern Consortium, diversify by redefining roles and redeploying personnel and equipment.

(iii) *Commercial and national agencies.* Materials production on any large scale could make use of existing commercial and other agencies. The BBC, for example, not only has experience matching materials to teacher in-service requirements, but has developed sophisticated mechanisms for distribution and disemination. It might welcome proposals for programmes to meet INSET needs nationally. It has to be recognised, however, that quality control and availability of supply can be lost by an individual authority

once production is put into commercial hands.

(iv) ***Writing teams.*** Experience in the United States, and with some projects in this country – the Science Teacher Education Programme (STEP) and the Primary Extension Programme (PEP) – shows that teachers are much more likely to respond to an innovation if they have been involved at an early stage. The formation of residential writing teams involves central though not massive funding, and guidance from a central coordinating body on writing briefs. Two stages are involved: the first being a residential 'brainstorming' meeting where ideas are shared and priorities identified; the second being the detailed writing of materials by individuals or small groups which may or may not be residential. Involving the user closely in production encourages considerable interchangeability of materials and flexibility in use. Where audio-visual materials are needed writing teams will need access to production facilities to be arranged.

(v) ***Cooperatives.*** These are characterised by the informality and the binding aspect of a common subject or topic area. In the past they have shown tremendous potential for self-help and self identity, but group reliability is low. Help from central bodies in the early stages of development and on information and training could increase their effectiveness as self-help production agencies. Cooperatives may consist of individuals or of small groups working together on the design only of material, or may unite institutions who between them also have the necessary production capacity.

(vi) ***Materials already available.*** Some authorities (notably the Inner London Education Authority), research units, publishers, polytechnics, universities and colleges, teachers' centres, television consortia, and individuals, have produced large amounts of materials which could be made suitable for local in-service courses, but at present much of it is probably under used. A programme of materials production for in-service should attempt to assess the value of the existing materials in terms of its *own* objectives for various aspects of the programme. In most cases it will probably be necessary to produce teachers' guides or similar support material to integrate such commercially or otherwise produced material.

3.3.2 Available staffing for the design and production of learning materials

Manpower, as well as the extensive materials resources mentioned above, already exists in many institutions in further and higher education, in a

form which might be diverted to the design and production of materials. This is particularly true during the present reorganization of teacher education, as has been pointed out in 'The contribution of colleges and departments of education to INSET', a report of a working party of the Advisory Committee on the Supply and Training of Teachers. This states the working party's conviction that 'if properly deployed, certain college tutors, supported by the colleges' learning resources, could *without further investment* become partners in providing support for the curriculum development work in the schools and *the associated professional development of those concerned.* Their contributions could include (in the context of teachers' centres) 'the staffing of short courses, conferences and workshops, and *the making of films, tapes, slides and other learning packages suitable for use and commissioned by teachers in their own INSET programmes'.*

However, it is not sufficient for an authority to commission college staff to design and produce materials. There would need to be a recognition of work of this kind as contributive to the staffing ratio of the college or department and to the career and salary prospects of the tutor. Failure to reach early agreement on these matters may result in second-rate provision for in-service. Nor can it be assumed that all tutors possess the skills necessary to design successful learning in 'packaged' form, and it may be necessary to provide in-service training for college staff in this new aspect of their work.

Use of materials depends on the user seeing their relevance, and this is frequently related to the credibility of the producer as an expert. Some colleges may be seen as ideal producers having both expertise and often considerable production capacity, but it is likely that they would be unacceptable to teachers in many situations. Credibility might be increased if production developed from partnership involving academics, learning system design experts and, most important, teachers. National projects such as STEP and PEP have shown the effectiveness of such a strategy. It may be important therefore to supplement the work of readily redeployed college staff with especially released teachers and advisers.

If an authority is to obtain maximum advantage from the staff already within its employment to implement an INSET programme through learning materials it may, therefore, have not only to agree the terms of redeployment of, for example, college tutors, but also to determine what additional support, and at what cost, will be necessary to enable those staff to perform adequately in the new context. If training is required the resources for this may be found within the lea already, and it will simply require the redirection of the efforts of suitable staff to retrain the new INSET staff, themselves released from other commitments for this purpose. Help may

be forthcoming from outside bodies (eg, CET) to support these 'retraining' activities.

Support of a continuing nature, eg, the inclusion of practising teachers on all materials development groups could involve additional expenditure if travel and subsistence, or the cost of replacement teachers had to be found. It will be important, therefore, for an authority to capitalise as much as possible on potential for the redeployment of staff and plant at present not totally committed.

3.3.3 The cost of design and production of learning materials

The real cost of the design and production of effective learning materials, particularly if the development phase is included, is very high. However, if much of the design, production and development can be achieved by the redeployment of staff and plant already paid for by an authority the *additional* expenditure is very small, comprising largely that for raw materials, the travel and subsistence support for working groups, etc, and administrative costs which can be largely subsumed. These costs in turn can be set against those which would have to be found for tutors, speakers, advisers, etc, to carry out a similarly school-based INSET programme through face-to-face teaching.

Furthermore, once learning is 'packaged' it may become viable outside of the producing authority, and ways may be found to share, or recoup the costs.

It will be clear therefore that an authority operating an INSET programme largely through learning materials is unlikely to do so for less real cost than for its present programme. However, the scheme proposed provides a means by which any slack in the present usage of certain existing educational resources may be taken up in the service of the INSET programme and it may provide viable alternatives to (expensive) redundancies of staff. The cost-benefit of the scheme to an authority will depend entirely on the degree to which it can obtain agreement for the redeployment of facilities and staff for which it already has a financial commitment.

3.4 Evaluation and development

One of the automatic inclusions in any respectable plan for materials development is evaluation. Essentially, evaluation is a process which provides information for decision making and it can only be effective if it is clear who will use the information obtained from the process, and what such information will be used for. For the purposes of making major decisions in a materials development programme, there are at least three key questions.

(i) Are the objectives selected for the whole programme or separate

parts of the programme the right ones?

(ii) Are the solutions (eg materials) achieving the objectives?

(iii) Are the mechanisms established for coordination, obtaining information and for coordinating the design and production and dissemination of materials working well: can a cost-benefit analysis be arrived at for the programme?

An evaluation scheme based on these questions should help those involved in the programme to maintain the quality of the service offered and improve it where possible. It is most important that evaluators should be associated, as early as possible, with the development of any such programme. Evaluation is likely to operate at two distinct levels: evaluation of the programme, its methods and the deployment of its resources; evaluation of specific materials produced within the programme.

3.4.1. Agencies for the evaluation and development of materials

The design of rigorous and valid instruments for evaluation of learning materials, particularly when those materials are intended to allow the teacher to assimilate new concepts and to apply them to long-term behaviour patterns in the classroom, is probably best left to specialists. The same is even more true of the evaluation of the objectives of the programme as a whole and of its methods of working, for which evaluation by an external body is required. Authorities may find university departments and research and development groups willing to undertake evaluation of materials, or of a whole INSET programme, as part of their research activity. The Department of Education and Science, the Council for Educational Technology, the National Foundation for Educational Research or other national bodies might agree to arrange external evaluation of a scheme for an authority.

However, evaluation of a less rigorous, possibly subjective, kind, but nevertheless essential to the pragmatic improvement and up-dating of materials can best be carried out by those who prescribe and use them, namely the advisers, headteachers, teacher tutors and the teachers themselves. Even so their judgements should be based on a clear understanding of the objectives of the material and possibly guided by simple tests, questionnaires, or suggestions for purposeful observations, devised by the design team. It follows that some arrangement is needed to receive evaluation information and cause it to be acted on. Since any unit of material will be part of a coordinated programme the most suitable group or individual is likely to be that with responsibility for initially determining users' needs, which will already have established links with the designers and producers of specific materials. If this is to be the arrangement then this function of organising a programme of evaluation should be included in the terms of reference of that group, and suitable authority

and funding vested in it.

3.5 Dissemination

There are two aspects to any dissemination programme: informing those who need access to the materials of how they may obtain them; providing a system for the efficient supply on demand and retrieval. Most authorities will already have these services in other contexts, eg, the loan to schools of audio-visual aids and equipment. A materials-based INSET programme will differ from such a service in one major way, that is in the overwhelming importance of consultancy which will be required to ensure an adequate match between the individual's needs and the materials provided. This consultancy function can properly be undertaken by the present advisory staff of an authority. However, their role will inevitably be affected if there is a large-scale adoption of independent learning materials, giving them greater opportunities to prescribe details of in-service programmes and involving them in increasing amounts of consultancy and counselling. It has to be recognised that not all advisers will be equally effective in these new roles and it will be necessary to develop training for those advisers who require help.

Authorities who do not have centralised services for informing about and distributing learning materials could use the advisory network for these purposes as well, or use the postal system, but in each case this requires that someone take on responsibility for receiving requests, processing them and any evaluation instruments included with the materials, issuing and checking. This is work of a clerical nature.

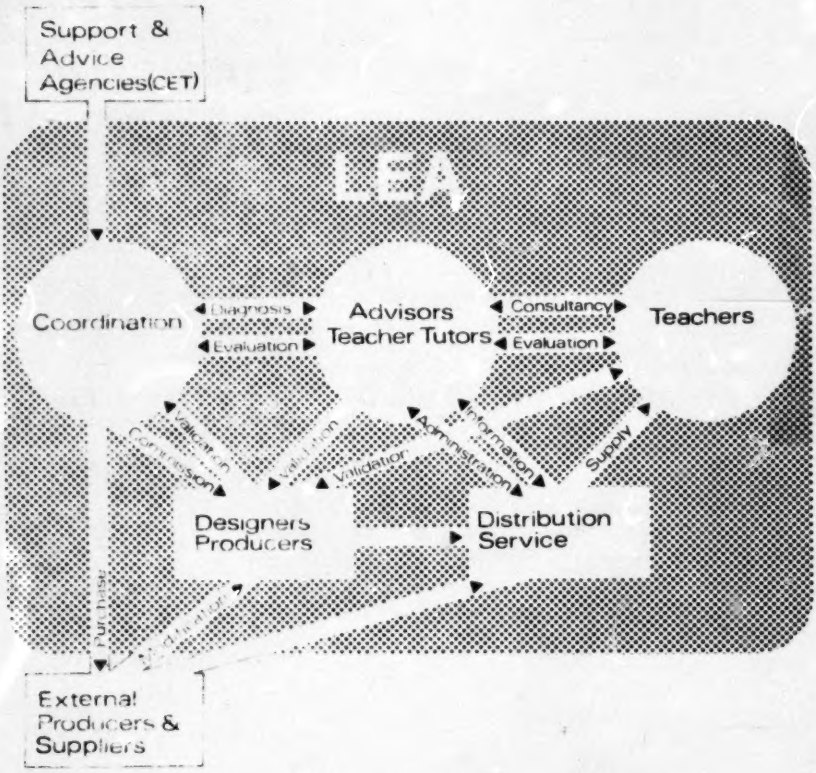
PART III: A MODEL FOR INSET MATERIALS DEVELOPMENT WITHIN A LOCAL EDUCATION AUTHORITY

In drawing up a model system for INSET materials development the following points have been borne in mind.

(i) The cost must be kept low which can only be done if existing resources can be used as often as appropriate.

(ii) Leas and their advisory staff have the major responsibility for providing programmes of in-service training. They must therefore have a central role in any programme related to in-service.

4.1 Coordination



If the assumptions made in Part II are substantially correct then most leas have operating already all but one of the components of the model above. The missing element in most cases is formal coordination of these components for the specific purposes of generating and administering INSET materials.

The function of an lea coordinator, or coordinating working party, would therefore be to establish the links between the various agencies and the procedures which would enable the system to operate as a whole. It is anticipated that this would involve persuading the agencies in some cases to adopt new roles, providing training in new skills where required,

negotiating acceptable terms for cooperation (eg, conditions of employment, inter-agency funding, recognition of work as contributory for salary and career purposes) and establishing new administrative procedures. This presumes an individual or working party with considerable authority. In addition the coordinator, or working party would, acting in conjunction with those responsible for the overall development of an in-service programme, decide on the suitability of certain parts of that programme for implementation through learning materials, and then the priorities among these parts. These decisions would need to rest on considerable understanding of local conditions and needs. This in turn presumes an individual, or working party, who enjoys goodwill, and professional credibility, at many levels of the educational system, acting with the authority of a clearly stated and generally agreed policy.

4.2 The potential of inter-authority cooperation

This paper has discussed the advantages, implications and a possible model for the establishment *within a single authority* of a system for the production and dissemination of INSET learning materials.

However, the potential of such a system could be much greater if the efforts of a number of authorities producing INSET learning materials could themselves be coordinated. This would allow them to exchange experience, to avoid unnecessary duplication of effort, possibly to exchange materials and to arrange the sharing of, particularly specialised, production facilities and staff. The inter-authority coordinating body would therefore provide channels for information, and possibly a negotiating machinery for use by the participating authorities. It might prove desirable to centralise at a later stage some services, such as inter-authority materials loan, or training facilities.

It would in no way be the function of the inter-authority coordinating body to attempt to influence any authority in its policy towards its INSET programme, in its priorities for provision or its modes of operation.

At present no other body then CET appears better constituted to carry out this inter-authority coordinating function.